WHAT IS CLAIMED IS:

An automatic cold working system comprising:
 a machine tool for machining holes in a workpiece;
 a cold working mandrel assembly movable in relation to the workpiece;
 and

means for automatically aligning a mandrel of the mandrel assembly with the holes of the workpiece and a surface of the workpiece.

- 2. The automatic cold working system of Claim 1, wherein each hole of the workpiece has a hole vector defined by an axis extending through a center of the hole, the mandrel has a mandrel vector defined by an axis extending longitudinally through a center of the mandrel, and the alignment means aligns the hole vector and the mandrel vector.
- 3. The automatic cold working system of Claim 2, wherein the hole vectors are oriented in different directions.
- 4. The automatic cold working system of Claim 1, wherein the mandrel assembly comprises a base attached to the mandrel, and the alignment means aligns a surface of the base substantially flush with the surface of the workpiece adjacent to a hole of the workpiece to be cold worked.
- 5. The automatic cold working system of Claim 1, wherein the machine tool comprises a drill.
- 6. The automatic cold working system of Claim 5, wherein the drill and the mandrel are arranged at an offset distance from each other, the mandrel has a mandrel vector defined by an axis extending longitudinally through a center of the mandrel, the drill has a drill vector defined by an axis extending longitudinally along the length of the drill, and the mandrel vector and drill vector are oriented in substantially the same direction.
- 7. The automatic cold working system of Claim 6, wherein the offset distance is from about 4 to about 10 inches.
- 8. The automatic cold working system of Claim 1, wherein the aligning means aligns the mandrel assembly against the surface of the workpiece by providing a stop position of the mandrel at an extended distance beyond a first distance at which the base of the mandrel initially contacts the surface of the workpiece.

- 9. The automatic cold working system of Claim 8, wherein the extended distance is from about 0.05 to about 0.1 inch.
- 10. The automatic cold working system of Claim 8, wherein the extended distance is about 0.075 inch.
- 11. The automatic cold working system of Claim 1, wherein the mandrel assembly is mounted on a five-axis head.
- 12. The automatic cold working system of Claim 1, wherein the mandrel is a split mandrel.
- 13. The automatic cold working system of Claim 1, wherein the machine tool and the cold working mandrel assembly are movable and the workpiece is stationary during the cold working operations.
- 14. The automatic cold working system of Claim 1, wherein the alignment means is mounted on a transportable support structure.
- 15. The automatic cold working system of Claim 1, wherein the surface of the workpiece is curved.
- 16. The automatic cold working system of Claim 1, wherein the workpiece comprises an aircraft component.
- 17. A method of automatically cold working holes in a workpiece, the method comprising:

moving a mandrel assembly in relation to the workpiece;
automatically aligning a mandrel of the mandrel assembly with at least one
of the holes of the workpiece and a surface of the workpiece adjacent to the at least one hole; and
cold working the at least one hole.

- 18. The method of Claim 17, wherein each hole of the workpiece has a hole vector defined by an axis extending through a center of the hole, the mandrel has a mandrel vector defined by an axis extending longitudinally through a center of the mandrel, and the hole vector is aligned with the mandrel vector.
- 19. The method of Claim 18, wherein the hole vectors are oriented in different directions.

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- 20. The method of Claim 17, wherein the mandrel assembly comprises a base attached to the mandrel, and a surface of the base is aligned substantially flush with the surface of the workpiece adjacent to a hole of the workpiece to be cold worked.
- 21. The method of Claim 17, further comprising providing a machine tool arranged at an offset distance from the mandrel for machining the holes in the workpiece.
 - 22. The method of Claim 21, wherein the machine tool comprises a drill.
- 23. The method of Claim 22, wherein the drill and the mandrel are arranged at an offset distance from each other, the mandrel has a mandrel vector defined by an axis extending longitudinally through a center of the mandrel, the drill has a drill vector defined by an axis extending longitudinally along the length of the drill, and the mandrel vector and drill vector are oriented in substantially the same direction.
- 24. The method of Claim 23, wherein the offset distance is from about 4 to about 10 inches.
- 25. The method of Claim 17, wherein the mandrel assembly is aligned against the surface of the workpiece by providing a stop position of the mandrel at an extended distance beyond a first distance at which the base of the mandrel initially contacts the surface of the workpiece.
- 26. The method of Claim 25, wherein the extended distance is from about 0.05 to about 0.1 inch.
- 27. The method of Claim 25, wherein the extended distance is about 0.075 inch.
- 28. The method of Claim 17, wherein the mandrel assembly is movable in at least five axes.
 - 29. The method of Claim 17, wherein the mandrel is a split mandrel.
 - 30. The method of Claim 17, wherein the surface of the workpiece is curved.
- 31. The method of Claim 17, wherein the workpiece comprises an aircraft component.